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10/650,386

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Seok-Hyun Yun

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09/21/2004

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EXAMINER

HASAN, MOHAMMED A

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/650,386

Applicant(s)

YUN ET AL.

Examiner

Mohammed Hasan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 - 32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 20, 26 - 32 is/are rejected.
- 7) ☒ Claim(s) 21 - 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Oath/Declaration***

1. Oath and declaration filed on 1/23/2004 is accepted.

### ***Drawings***

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because some figures are shadow and hand written numbers. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1- 11 and 26 – 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al (6,021,237).

Regarding claim 1, Kim et al discloses (refer to figure 1) a method to reduce optical intensity modulation comprising: generating a spiraling wave (111) onto an acoustic-optic interaction portion (112) of an optic fiber (122) within an acousto-optic filter in order to create reflected wave components that are orthogonal with respect to wave components that are originally onto interaction portion (column 3, lines 62 – 67, column 4, lines 1 – 40).

Regarding claim 2, Kim et al discloses (refer to figure 2A) wherein generating further comprises: inducing a first stress to a transducer (111) in a first direction with a first signal (211), first stress being transformed into first component of spiraling wave and inducing a second stress to transducer (111) in a second direction with a second signal (212), second stress being transformed into a second component of spiraling wave, second having a phase difference with first signal (column 4, lines 54 – 60).

Regarding claim 3, Kim et al discloses, wherein first (111) and second (112) wave components are perpendicular to each other (as shown in figure 1).

Regarding claim 4, Kim et al discloses, wherein the first and second signals (211 and 212) are  $90^0$  with respect to each other (as shown in figure 2A).

Regarding claim 5, Kim et al discloses, wherein first and second signals (211 and 212) have a different frequency (column 4, lines 54 – 60).

Regarding claim 6, Kim et al discloses, wherein first (111) and second (112) wave components are have different amplitudes (column 4, lines 6 – 11).

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Regarding claim 7, Kim et al discloses (refer to figure 1) wherein generating further comprises : inducing a stress to an acoustic transducer (111) along an axis, amplifying stress with a cone (112) having an elliptical cross section and transferring amplified stress to acoustic-optic interaction portion of optical fiber (122) (column 3, lines 62 – 67, column 4, lines 1- 11).

Regarding claim 8, Kim et al discloses, wherein elliptical cross section has a second axis oriented at  $45^0$  with respect to axis (as shown in figure 1).

Regarding claim 9, Kim et al discloses, wherein acoustic transducer is a ring (column 2, lines 25 – 27).

Regarding claim 10, Kim et al discloses (refer to figure 1) wherein generating further comprises applying electronic signals (151) to transducer (111) (column 4, lines 12 - 23).

Regarding claim 11, Kim et al discloses, comprising monitoring spiraling and adjusting electronic signals in response to monitoring (column 2, lines 27 – 31).

Regarding claim 26, Kim et al discloses (refer to figure 1) an apparatus comprising: an acousto-optic filter having a horn (112) with an elliptical crossection coupled to transducer (111) (column 4, lines 1 – 40, column 4, lines 61 – 65).

Regarding claim 27, Kim et al discloses, wherein transducer is a transducing ring (column 2, lines 25 – 27).

Regarding claim 28, Kim et al discloses, wherein transducer (111) is a shear mode transducing ring (column 4, lines 3 – 7).

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4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12 – 20 and 29 – 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Congdon (4,706,229).

Regarding claim 12, Congdon discloses (refer to figure 5) a transducer (22) comprising: a first section (34) and a second section (36), first and second sections each having a polling direction along a first axis (i.e., X axis), a third section (38) and a fourth section (40) , third and fourth sections each having a polling direction along a second axis (i.e., Y axis), third and fourth sections each between first and second sections (column 4, lines 39 – 49) .

Regarding claim 13, Congdon discloses, wherein the first axis ( X axis) and second axis (Y axis) are perpendicular to each other (as shown in figure 5).

Regarding claim 14, Congdon discloses, wherein the polling direction first section points in a direction opposite to polling direction of second section (as shown in figure 5).

Regarding claim 15, Congdon discloses, wherein polling direction of third sections points in a direction opposite to polling direction of fourth section (as shown in figure 5).

Regarding claim 16, Congdon discloses, wherein polling direction of first section and second section are uni-directional (as shown in figure 5).

Regarding claim 17, Congdon discloses (refer to figures 5 and 7) , wherein transducer (22) is a transducing ring and polling direction of first section and second section vary radially around .

Regarding claim 18, Congdon discloses, wherein transducer (22) is configured to receive a first signal at a first section and receive a second signal at third section (column 5, lines 25 – 33).

Regarding claim 19, Congdon discloses, wherein the first and second signal are  $90^{\circ}$  out of phase with respect to each other (as shown in figure 5).

Regarding claim 20, Congdon discloses, wherein the first signal has a first frequency and second signal has a second frequency, first frequency different than second frequency (column 5, lines 25 – 33).

Regarding claim 21, Congdon discloses, wherein the first signal has a first frequency and second signal has a second frequency different than second frequency (column 5, lines 25 – 33).

Regarding claim 29, Congdon discloses (refer to figures 5 and 7) a method of a transducer (22) capable of generating spiraling acoustic waves comprising: piecing together sections of transducers (ring 22 is comprised of quadrants 34, 36, 38, 40) that had polling directions along an axis and where broken to form sections, piecing together further comprising placing a first of section whose polling direction runs from an outer edge of structure to an inner edge of structure opposite that of a second of sections whose polling direction runs from an inner edge of structure to an outer edge of structure (column 4, lines 39 – 46, column 5, lines 25 - 48).

Regarding claim 30, Congdon discloses (referring to figure 5) wherein transducer (22) is a transducing ring and transducers are transducing rings, piecing together further comprising placing a first sections whose polling directions runs from an



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outer edge of ring to an inner edge of ring opposite that of a second of sections whose polling directions runs from an inner edge of ring to an outer edge of ring (column 4, lines 39 – 46).

Regarding claim 31, Congdon discloses (refer to figure 5) an apparatus comprising: a transducer (22) for excitation capable of launching spiraling acoustic waves transducers comprising a first of section whose polling direction runs from an outer edge of structure to an inner edge of structure opposite that of a second of sections whose polling direction runs from an inner edge of structure to an outer edge of structure (column 4, lines 39 – 68).

Regarding claim 32, Congdon discloses (refer to figure 5) wherein transducer is a transducing ring (2) and transducing ring comprising a first sections whose polling directions runs from an outer edge of ring to an inner edge of ring opposite that of a second of sections whose polling directions runs from an inner edge of ring to an outer edge of ring (column 4, lines 39 – 68).

### ***Allowable Subject Matter***

5. Claims 21 – 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show, wherein to generate a first spiraling wave and a

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second spiraling wave where first spiraling wave is orthogonal to second spiraling wave and first signal includes a first component having a first frequency and a second component having a second frequency and second signal includes a first component having a first frequency and a second component having a second frequency and first signal having a phase difference with respect to first component of second signal and second component of first signal having a phase difference with respect to second component of second signal and phase differences are sufficient to cause first spiraling wave and second spiraling wave to each possess clockwise spiraling motion.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art

Congdon (4,546,459) discloses a method and apparatus for a phased array transducer.

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272- 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MH

September 8, 2004



Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800